

of nine successful attempts). There appears to be two groups of falcons wintering in the SRBOPNCA; those that bred there the previous summer and those that migrated into the SRBOPNCA. The sex ratio of the nine breeders that remained was significantly biased toward males (nine males: one female;  $\chi^2 = 4.01$ ,  $P < 0.05$ ). However, the sex ratio of the 17 birds trapped during the winter (that likely migrated into the SRBOPNCA) was not significantly different from a 1:1 ratio (10 males: seven females;  $\chi^2 = 1.41$ ,  $P < 0.25$ ). We will discuss different migration strategies, methodology, climatology, and status of resource base as alternative explanations for the difference in sex ratios between the two groups of wintering prairie falcons.

**RESPONSES OF GREAT HORNED OWLS (*BUBO VIRGINIANUS*) TO THE SNOWSHOE HARE CYCLE IN THE BOREAL FOREST**

ROHNER, C. *Department of Zoology, University of British Columbia, Vancouver, BC V6T 1Z4 Canada*

Great horned owls (*Bubo virginianus*) were studied in the subarctic boreal forest in the southwestern Yukon from 1988–93. During the increase phase of the population cycle of snowshoe hares (*Lepus americanus*), almost all resident owl pairs bred and raised large broods. Survival of young owls in their first two years of life was high, and two females were observed to breed as yearlings. Densities of territorial owls almost doubled, but most juveniles became nonterritorial 'floaters,' presumably because social behavior was limiting the number of territories. Floaters were silent, their ranges overlapped with territories, and their density reached 40–50% of the total population. As snowshoe hares declined, the number of recruits dropped sharply. Postfledging mortality was high, and the role of predation and disease in interaction with food shortage are evaluated. Overall mortality and emigration increased earlier for floaters than for territorial birds as hare densities further declined. A behavioral mechanism for the time lag in the numerical response to the hare cycle is proposed, and constraints to increase reproduction at high prey densities are interpreted in the context of life history evolution.

**GRASSLAND PASSERINES AS INDICATORS OF HABITAT USE BY NORTHERN HARRIERS IN RECLAIMED SURFACE MINES OF PENNSYLVANIA**

ROHRBAUGH, R.W. AND R.H. YAHNER. *School of Forest Resources, The Pennsylvania State University, University Park, PA 16802 U.S.A.*

We documented the presence of grassland passerines associated with areas used by northern harriers (*Circus cyaneus*) in reclaimed grassland surface mines of Pennsylvania. Reclamation of surface mines in Pennsylvania has created suitable grassland habitat for nesting and foraging

harriers and other grassland avifauna. This research was part of a long-term research project that examines the status and the management of northern harriers in Pennsylvania. Our objective was to determine if grassland passerines can be used as indicators of suitable harrier habitat. We surveyed and compared communities of grassland passerines associated with sites frequently used by harriers (harrier observation sites) to three types of randomly selected sites that were infrequently or unused by harriers. Harrier observation sites and random sites were selected based on approximately 124.9 hr of surveying for harriers along 108 km of survey routes that transected reclaimed surface-mine habitat. Three of 10 grassland passerine species that commonly were associated with harrier observation and random sites significantly differed among site types. Bobolinks (*Dolichonyx oryzivorus*) ( $P < 0.001$ ) and Henslow's sparrows (*Ammodramus henslowii*) ( $P < 0.01$ ) were observed more frequently than expected at harrier observation sites, whereas chipping sparrows (*Spizella passerina*) were observed less frequently than expected ( $P < 0.025$ ) at these sites. Results of this research are being used to develop management recommendations for harriers and grassland passerines using reclaimed surface mines.

**NEST-SITE FIDELITY OF COOPER'S HAWKS IN WISCONSIN**

ROSENFELD, R.N. *Department of Biology, University of Wisconsin, Stevens Point, WI 54481 U.S.A.* J. BIELEFELDT. *Park Planning, Racine County Public Works, Sturtevant, WI 53177 U.S.A.*

Long-term data on nest-site fidelity on Cooper's hawks (*Accipiter cooperii*) is unavailable. Captures of 154 separate individual breeding male Cooper's hawks at 102 nesting areas during 1980–94, plus 86 recaptures of 60 marked males at 45 nesting areas were used to examine nest-site fidelity in Wisconsin. All recaptured males were found on sites where originally trapped; no movement was detected. Detections of inter-year movements in breeding females and natal dispersal of both sexes, and other lines of evidence indicated that our sample sizes offered adequate opportunity to detect potential breeding dispersal in males. We suggest that breeding male Cooper's hawks in Wisconsin exhibit lifetime nest-site fidelity.

**BREEDING BIOLOGY, DIET, AND HUNTING BEHAVIOR OF PLUMBEOUS KITES (*ICTINIA PLUMBEA*) IN TIKAL NATIONAL PARK, PETÉN, GUATEMALA**

SEAVY, N.D. *17142 Lemolo Shr. Dr. N.E., Poulsbo, WA 98370 U.S.A.* M.D. SCHULZE. *215 Chatham Rd., Columbus, OH 43214 U.S.A.* M.A. VASQUEZ. *Parque Nacional Tikal, Petén, Guatemala.* D.F. WHITACRE. *The Peregrine Fund, Inc., Boise ID 83709 U.S.A.*

We studied the breeding biology of the plumbeous kite (*Ictinia plumbea*) in Tikal National Park, Petén, Guate-